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RefSeq Gene

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Gene type: protein coding Gene name: ERBB2

Gene description: v-erb-b2 erythroblastic leukemia viral oncogene homolog 2,

neuro/glioblastoma derived oncogene homolog (avian)

RefSeq status: Provisional Organism: Homo sapiens

Lineage: Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo

Gene aliases: NEU; NGL; HER2; TKR1; HER-2

General protein information:

Names: v-erb-b2 erythroblastic leukemia viral oncogene homolog 2,

neuro/glioblastoma derived oncogene homolog

Avian erythroblastic leukemia viral (v-erb-b2) oncogene homolog 2; v-erb-b2 avian erythroblastic leukemia viral oncogene homolog 2 (neuro/glioblastoma derived oncogene homolog)

## **Bibliography:**

PubMed links

# GeneRifs:

- 1. ErbB1 and ErbB2 employ different mechanisms of plasma membrane targeting during keratinocyte differentiation, and that cytoskeletal association may facilitate the coupling of activated ErbB1 and ERK.
- 2. ErbB2 overexpression in an ovarian cancer cell line confers sensitivity to the inhibitor geldanamycin (HSP90)
- 3. evaluation by immunohistochemistry and fluorescence in situ hybridization in breast cancer; implications for daily laboratory practice
- 4. evaluation of relative prognostic weight in breast cancer using multivariate analysis

- 5. cells overexpress HER2. Signals from overexpressed EGFRs contribute to the constitutive phosphorylation of Erk, but these signals may not required for the constitutive activation of PI3K or AKT1.
- 6. ErbB2 can be a useful marker for tumour contamination in aphereses of patients affected by ErbB2-expressing osteosarcomas and that analysis of Bone Sialoprotein expression can be an alternative useful marker.
- 7. YAP is a potential signaling partner of the full-length ErbB4 receptor at the membrane and of the COOH-terminal fragment of ErbB-4 that translocates to the nucleus to regulate transcription
- 8. peptide library generation for HER2/neu ligand identification
- 9. HER-2 gene amplification and protein overexpression has been associated with increased risk of advanced-stage breast cancer and poor prognosis.
- 10. Epidermal growth factor receptor (HER1) tyrosine kinase inhibitor ZD1839 (Iressa) inhibits HER2/neu (erbB2)-overexpressing breast cancer cells in vitro and in vivo.
- 11. overexpression not associated with in vitro drug resistance to CMF or FEC chemotherapy combinations in primary breast cancer
- 12. Expression and gene copy number analysis of ERBB2 oncogene in prostate cancer.
- 13. Identification of a minimal c-erbB-2 promoter region that mediates preferential expression of a linked foreign gene in human breast cancer cells
- 14. NH(2)-terminal truncated HER-2 protein but not full-length receptor is associated with nodal metastasis in human breast cancer
- 15. HER-2-positive breast carcinomas as a particular subset with peculiar clinical behaviors.
- 16. Characterization of the HER-2/neu oncogene by immunohistochemical and fluorescence in situ hybridization analysis in oral and oropharyngeal squamous cell carcinoma
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- 18 ErbB-2 demonstrates a strong tendency toward stable self-association of transmembrane domains identifiable as coexisting populations of peptides whose associations are thought to modulate signal transduction.
- 19. lack of amplification in nasopharyngeal neoplasms
- 20. feasibility of fluorescence in situ hybridization analysis of HER-2/neu amplification in oral mucosa brushings and to compare the HER-2/neu status with the history and smoking and drinking habits of healthy subjects
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- 22. Except in a certain subset of cases, aneusomy 17 probably is not a significant factor for HER-2/neu protein expression or for clinical assessment of HER-2/neu status.
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- 25. expression of cyclooxygenase 2 in HE-2 positive breast cancer
- 26. Epidermal growth factor contains both positive and negative determinants for interaction with ErbB-2/ErbB-3 heterodimers
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- 28. ErbB-beta-catenin complexes are associated with human infiltrating ductal breast and murine mammary tumor virus (MMTV)-Wnt-1 and MMTV-c-Neu transgenic carcinomas.
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- 30. Mechanism of 17-beta-estradiol-induced Erk1/2 activation in breast cancer cells. A role for HER2 AND PKC-delta
- 31. Cyclooxygenase-2 (COX-2), epidermal growth factor receptor (EGFR), and Her-2/neu are expressed in ovarian cancer.
- 32. gene is essential in preventing dilated cardiomyopathy
- 33. overexpression seen in 16% of NSCLC tumors, most frequently in adenocarcinomas and large cell carcinomas
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- 42. Overexpression of erbb2 increases expression of VEGF A, C and D in breast carcinoma
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- 45. The expression of this molecule and its correlation with prognostic markers in patients with head and neck tumors
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- 47. ERBB-2 overexpression and cyclooxygenase-2 up-regulation in human cholangiocarcinoma and risk conditions.

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- 49. overexpression in an ovarian cancer cell line confers sensitivity to the HSP90 inhibitor geldanamycin
- 50. uPA and its receptor are not upregulated by the circulating fraction of this proto-oncogene in advanced NSCLC
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- 58. c-myc and c-erbB2 amplification in breast cancer
- 59. differential gene expression patterns in positive and negative breast cancer cell lines and tissues
- 60. High-level coexpression of ERBB2 and ERBB4 was significantly related to tumor proliferative activity in ependymoma
- 61. marked intratumoral heterogeneity of c-myc and cyclinD1 but not this gene in breast cancer
- 62. C-erb-2 overexpression is not statistically related to either proliferation or cancer specific death in upper urinary tract urothelial tumors.
- 63. contribution of HER2 transcription factor binding site to ERBB2 overexpression
- 64. Cell proliferation, nuclear ploidy, and EGFr and HER2/neu tyrosine kinase oncoproteins in infiltrating ductal breast carcinoma.
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- geriatric patients
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- 75. Transcriptional analysis reveals a molecular connection to fatty acid synthesis.
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- 85. results demonstrate that tamoxifen resistant MCF-7 cell growth is mediated by the autocrine release and action of an epidermal growth factor receptorspecific ligand inducing preferential epidermal growth factor receptor/cerbB2 dimerization
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- interact with other ligand-activated ErbB receptors
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- 91. erbB-2-mediated invasiveness is dependent on p38MAPK induces cell surface alpha4 integrin downregulation
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- 97. ERBB-2 signaling is regulated by a MUC4/sialomucin complex
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- 104. Levels of this receptor in blood serve as a predictive marker for the clinical course of breast cancer.
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- 117. HER2 has a role in reducing apoptosis in breast cancer cells treated with 4-
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- signaling pathway in breast cancer cells
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- 135. COX-2 up-regulates VEGF-C and promotes lymphangiogenesis in human lung adenocarcinoma via the EP(1)/Src/HER-2/Neu signaling pathway.

## General gene information

# GeneOntology

Provided by GOA		
Function	Evidence	
ATP binding	IEA	
ErbB-3 class receptor binding	TAS	PubMed
epidermal growth factor receptor activity	IΕΑ	
non-membrane spanning protein tyrosine kinase activity	IDA	PubMed
receptor activity	IEA	
receptor signaling protein tyrosine kinase activity	TAS	<u>PubMed</u>
transferase activity	IEA	
Process		
cell proliferation	TAS	<u>PubMed</u>
protein amino acid phosphorylation	IEA	<u>PubMed</u>
protein amino acid phosphorylation	TAS	<u>PubMed</u>
transmembrane receptor protein tyrosine kinase signaling pathway	IDA	<u>PubMed</u>
transmembrane receptor protein tyrosine kinase signaling pathway	IEA	PubMed
Component		
extraceilular	IDA	PubMed
integral to membrane	IΕA	
membrane	IEA	

#### Homology:

Mouse

Erbb2 11 57.00 cM Erbb2

NP 004439: EC 2.7.1.112 Sequence Tagged Site (Markers) RH75810 (e-PCR) GDB:181407 (e-PCR)

#### NCBI Reference Sequences (RefSeq)

mRNA Sequence NM 004448

Source Sequence M11730

Product NP 004439 v-erb-b2 erythroblastic leukemia viral oncogene homolog 2, neuro/glioblastoma derived oncogene homolog

#### **Domains**

pfam01030: Receptor L domain score:218 ed00192: Tyrosine kinase, catalytic domain score:883 pfam00757: Furin-like cysteine rich region score:135 KOG1025: Epidermal growth factor receptor EGFR and related tyrosine kinases [Signal transduction mechanisms] score:4014

### Related Sequences

Nucleotide	•	Protein
Genomic	AB025285	None
mRNA	AB025286	None
mRNA	<u>AF177761</u>	<u>AAD56009</u>

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M11730 mRNA AAA75493 X03363 CAA27060 mRNA None P04626

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